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**Alaia et al.**

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(54) **METHOD AND SYSTEM FOR BIDDING IN ELECTRONIC AUCTIONS USING FLEXIBLE BIDDER-DETERMINED LINE-ITEM GUIDELINES**

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(List continued on next page.)

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## (57) ABSTRACT

A method and system for conducting electronic auctions is described. A dynamic lot closing extension feature avoids collisions in closing times of multiple lots by dynamically extending the closing time of a subsequent lot if a preceding lot's closing time is extended to be too close to the subsequent lot's then-currently scheduled closing time. Scheduled closing times can be extended with a flexible overtime feature, in which the properties of the event triggering the extension and the duration of the overtime period(s) can be tailored to a particular auction, particular lots of products within an auction, and to the particular time within an auction process. The bidding status of a lot can be set to a "pending" status after the nominal closing time for submission of bids to allow bidders to alert the auction coordinator of technical problems in submission of bids. This allows the possibility for a lot to be return to open status for further bidding by all bidders. The auction may be paused by the auction coordinator to correct technical, market and miscellaneous problems that may arise during the course of an auction. Individual bid ceilings can be set for each bidder so that they are required to bid lower than certain thresholds determined in advance of the auction. Failsafe error detection is performed to prevent erroneous bids from entering the auction. The auction coordinator has the ability to override any erroneous bids that are entered to prevent prejudice to the auction.

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## Related U.S. Application Data

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(51) **Int. Cl.**<sup>7</sup> ..... **G06F 15/30**

(52) **U.S. Cl.** ..... **705/37; 705/26; 705/1; 705/27**

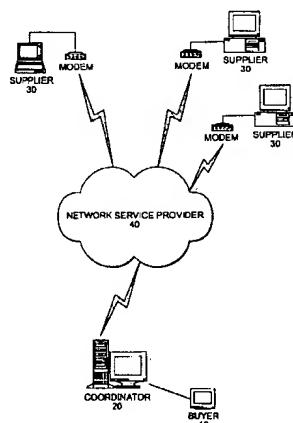
(58) **Field of Search** ..... **705/26, 37, 1, 705/27**

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**49 Claims, 15 Drawing Sheets**



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**\*\*See image for Certificate of Correction\*\***

TITLE: Method and system for bidding in electronic auctions  
using flexible bidder-determined line-item guidelines

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Brief Summary Text - BSTX (28):

The Auction is conducted electronically between potential suppliers 30 at their respective remote sites and the coordinator 20 at its site. As shown in FIGS. 3 and 4, information is conveyed between the coordinator 20 and the suppliers 30 via a communications medium such as a network service provider 40

accessed by the participants through, for example, dial-up telephone connections using modems, or direct network connections. A computer software application is used to manage the Auction. The software application has two components: a client component 31 and a server component 23. The client component 31 operates on a computer at the site of each of the potential suppliers 30. The client component is used by suppliers 30 to make bids during the Auction. The bids are sent via the network service provider 40 to the site of the coordinator, where it is received by the server component 23 of the software application. The client component includes software used to make a connection through telephone lines or the Internet to the server component. Bids are submitted over this connection and updates are sent to connected bidders.

Brief Summary Text - BSTX (29):

Bids can only be submitted using the client component of the application--this ensures that buyers do not circumvent the bidding process, and that only invited suppliers participate in the bidding. Typically, bidders can see their bids and bids placed by other suppliers for each lot on the client component. When a bidder submits a bid, that bid is sent to the server component and evaluated to determine whether the bid is from an authorized bidder, and whether the bid has exceeded a pre-determined maximum acceptable price. Bids placed by a supplier are broadcast to all connected bidders

thereby enabling every participating bidder to see quickly the change in market conditions and begin planning their competitive responses.

**Brief Summary Text - BSTX (32):**

Associated with each lot at any given time in the progress of the Auction is a bidding status. The possible bidding statuses are illustrated in FIG. 5. The status initially assigned to each lot, before the scheduled start time of the Auction, is "Available." This status indicates that the lot will be available for bidding in the Auction. In the normal sequence of an Auction, the next bidding status is "Open," which indicates that the Auction is underway and that bids can be submitted for the lot. There are two possible bidding statuses to which a lot with an "Open" status can change: "Overtime" and "Closed." Overtime indicates an extension of time to allow bidding to continue after the scheduled closing time for bidding on the lot. If bidding is still active at the end of a first Overtime period of predetermined duration, the server application allows a second Overtime, and so on, until bidding has closed. "Closed" indicates that the server application will no longer accept bids on the lot. A lot's status changes from Overtime only to Closed.

**Brief Summary Text - BSTX (34):**

The presented information changes during the course of bidding. For purposes of illustration in this example, a series of bids for lot 01 is shown in FIG. 8. Selected bids are identified by an "Event" code (A, B, etc.) in the first column. The bidder's identity is shown in the second column. The time at which the bid was submitted and the amount of the bid are shown in the third and fourth columns. Finally, the best bid in existence at the time of each subsequent bid is shown in the last column.

**Brief Summary Text - BSTX (35):**

The changes in status of lot 01 are also illustrated in FIG. 7 for selected times and corresponding bidding events during the Auction. FIG. 7A shows a time line for lot 01, with the bid event letters corresponding to the bids in FIG. 8.

**Brief Summary Text - BSTX (38):**

When bid B is received, the status of lot 01 immediately changes to Overtime, because bid B is a low bid and is received at 10:29:06, within one minute of 10:30. The scheduled closing time is therefore delayed until 10:31, which is one increment t (one minute) after the original dosing time of 10:30. This additional increment is available for bidders to consider whether to

submit a bid in response to bid B.

Brief Summary Text - BSTX (50):

Bidders must often respond to multi-million-dollar decisions in a few seconds. The fast response required creates cognitive limits--a bidder cannot realistically focus on more than one decision at a time. Many bidders are under some sort of emotional stress when participating, due to the **change** involved. In some cases, incumbent bidders are literally "fighting for their lives" in situations where losing the contract in question literally means losing their business.

Brief Summary Text - BSTX (56):

In the prior system, if a valid, low bid is received in a specified time interval before a lot's scheduled closing time, then the closing time is **amended** (delayed) to give other bidders more time to react to the late-arriving bid. A bid for second place, something an incumbent supplier might be expected to do, would not trigger an overtime. Unlike in-per auctions, industrial auctions need to allow second place bids. Thus, it has been found that this is an overly simplistic model, which may still be cutting off bidding too soon. A low bidder needs a chance to react to a second place bid, but it cannot if that second place bid does not trigger overtime. Therefore, it would be desirable to be able to trigger Overtime, or extend Overtime, on the basis of more complex bid scenarios.

Brief Summary Text - BSTX (59):

With the time constraints on bidding, bidders wanted the ability to be able to rapidly adjust the lot price without specifically **changing** individual line items. Therefore, "pro rata" bid adjustment was developed. With pro rata bid adjustment, bidders could **change** the total lot price quote, and the software would apportion pro rata the **change** across individual line items in the lot. However, a pro rata apportionment may result in individual items being priced at levels that are uneconomic for the bidder. For some items the bidders may wish to set decision rules for adjusting the unit price quotes at the line item level. For example, bidders may wish to lock-in a preset floor or ceiling on particular line items within a lot. These decision rules, or "locks" cause the pro rata adjustments to be applied selectively instead of universally.

Brief Summary Text - BSTX (75):

Flexible line-item decision rules enable bidders to lock-in a fixed and variable portion of the price quote prior to the bid. Total bids for a lot can

then be adjusted rapidly in response to market activity without **changing** individual line item quotes to uneconomic levels. In addition, bidders have the comfort of setting floors or ceilings on individual or cost component bids. During the bidding event, fixed components can be reevaluated and unlocked if necessary in response to movements in the market beyond original expectations.

This bidding flexibility allows bidders to participate in the auction fully, and increases competition.

Drawing Description Text - DRTX (8):

FIGS. 7A-7B illustrate the **change** in bidding status of one lot in the Auction illustrated in FIGS. 6A-6D.

Drawing Description Text - DRTX (10):

FIGS. 9A-9B illustrate the **changes** in bidding status and closing times for multiple lots using the dynamic lot dosing extension feature.

Detailed Description Text - DETX (6):

FIG. 9B shows the **changes** of status of various **parameters in the auction** as

bids are received. FIG. 9B identifies the time interval during which the bid is received, the bidding status of Lot X before and after the bid is received, the bidding status of Lot Y before and after the bid is received, the closing time of Lot X before and after the bid is received, and the closing time of Lot Y before and after the bid is received.

Detailed Description Text - DETX (7):

The Auction begins at time  $t_1$ . At the beginning of the Auction, and during the initial course of bidding, both lots have a bidding status "Open." During the course of bidding, a bid submitted on Lot X can trigger an extension of Lot X's closing time (e.g. a new market bid submitted within a predetermined amount of time before the closing time). Thus, bids A and B do not **change** the bidding status of Lot X or the closing times of the lots, because they are not received within a trigger period before the scheduled closing time of Lot X (in this instance, the trigger period is one interval  $\Delta t$ ). However, bid C, which is a new low bid received within the time interval  $t_5$ - $t_6$  (within  $\Delta t$  of closing time  $t_6$ ), triggers "Overtime" for Lot X. This is reflected in FIG. 9B, which indicates that the bidding status of Lot X was "Open" before the bid and "Overtime" after the bid. The scheduled closing time for Lot X is extended by an Overtime interval (defined in this example to be one interval  $\Delta t$ ) from

t6 to t7. Since there are still three time intervals  $\Delta t$  between the closing time of Lots X and Y ( $t_7 - t_{11}$ ), there is no **change** to the closing time of Lot Y.

Detailed Description Text - DETX (10):

Finally, when Bid F is received in the interval between  $t_7$  and  $t_8$ , the closing time for Lot X is extended by another increment  $\Delta t$  to  $t_9$ . Because this extension in Lot X's closing time would reduce the interval between the lots' closing times to below the minimum interval of three  $\Delta t$ 's, Bid F triggers Lot Y to **change** status from Open to Extended, and extends the closing time for Lot Y to  $t_{12}$ .

Detailed Description Text - DETX (38):

This particular flexible line-item decision rule allows bidders to lock in a fixed and a variable portion of the price quote prior to the bid. Total bids for a lot can then be adjusted rapidly in response to market activity without **changing** individual item quotes to uneconomic levels. Further, bidders have the comfort of setting floors or ceilings on all or part of individual line item bids. During the Auction, fixed components can be re-evaluated and unlocked if necessary in response to movement in the market for the lot beyond original expectations.

Detailed Description Text - DETX (43):

It should be noted that the locked/unlocked feature represents only one example of a flexible line-item decision rule that can be implemented. Generally, a line item bid can be adjusted based upon one or more **changes** at the lot or line item level. These flexible line-item decision rule can be created to accommodate any pre-auction bidding strategy that could be jeopardized by the bidder's interaction in a real-time auction event. For example, a customized flexible line-item decision rule can be created such that the price of a first line item maintains a specified proportion to the price of a second line item. This particular flexible line-item decision rule may be important where the bidder must ensure that one or more particular line item bids conform to internal corporate guidelines (e.g., marketing, accounting, sales, etc.). More generally, it is contemplated by the present invention that any aspect of a line item bid (e.g., unit price, quantity, delivery time, line item characteristic, etc.) can be related to, and thereby adjusted, based upon a **change** in one or more aspects of the supplier's bid at either the lot or fine item level.

Detailed Description Text - DETX (46):

Pending status is implemented in the illustrated auction system by storing two parameters in storage 22B: one parameter that specifies the length of the pending interval and one that specifies whether a lot should automatically close when that interval expires. The length parameter can be set differently for each lot. These parameters are read from storage 22B into memory 22A for use by the server component of the application software when an Auction is loaded. When the scheduled closing time for a lot is reached, the bidding status is set to "Pending" instead of "Closed." If the automatic close flag is set to "YES", then a clock begins to count down the pending interval. If no other intervention takes place and the pending interval expires, then the lot is closed automatically. If the automatic close flag is set to "NO," then the lot will remain in the Pending status until manual intervention takes place. Manual intervention in either case can take the form of changing the automatic close flag (either from NO to YES or from YES to NO), returning the lot to open status and setting a new close time, or manually closing the market.

Detailed Description Text - DETX (48):

At this point, if no external events occur, the lot will remain in the Pending state through the pending time, and then become Closed. This is reflected through steps 750-780-785-760-770. The step 750-step 780 loop is executed throughout the pending period until pending\_time is 0, at which point step 760 is executed. Nothing has occurred that would change the value of Auto\_close, so it is still YES, therefore step 770 will be executed, and the lot closes.

Detailed Description Text - DETX (49):

One external event that can occur is a bidder calling the coordinator during the Pending period to communicate problems that occurred during the bidding for that lot. If this happens, the coordinator manually changes Auto\_close to NO in external event step 740. This will not affect anything in the loop 750-780-the software continues to check the status during the pending time, but not the Auto\_close flag. At the end of the pending time, step 760 is executed. This time, since Auto\_close was changed to NO by the coordinator, the process loops back to step 780, where the status is checked. The loop 750-760-780 will be executed repeatedly until the coordinator manually changes either the Auto\_Close flag or the Status. If after investigation, it turns out that the bidding does not need to be returned to open status, then the coordinator can change the Auto\_close flag back to YES 744, and the process will exit the loop at step 760, going to step 770, and closing the lot. If after investigation it is decided that the bidding should be reopened for that lot, the coordinator

can manually change the status to OPEN. After the status is changed, the loop will exit at step 780, going to step 790. The closing time for this lot will be adjusted to a new scheduled closing time, and the Auction will start receiving bids again for that lot at step 710. The entire process 700 is repeated.

Detailed Description Text - DETX (51):

The possible bidding statuses for the present auction system and method are identified in FIG. 10. In addition to the statuses identified in FIG. 5 for the prior auction system, the present system includes the statuses of Extended and Pending. As shown in FIG. 10, a lot can change from Open status to Overtime, Extended or Pending. A lot can change from Overtime to Pending status. Further, a lot can change from Pending to Open or Closed status.

Detailed Description Text - DETX (59):

The technical disruption is resolved at 10:30 AM. The auction coordinator alters the closing times (but not the opening times) of the lots to give the bidders an additional 10 minutes to bid on Lot 1, and to space out the closing times of Lots 2 and 3 at 20 minute intervals. The auction coordinator does not change the opening times of the lots, and therefore preserves bids that have already been made. All lots return to Open status when the Auction Pause is lifted and may commence bidding immediately. The auction now appears as shown in Table 5.

Detailed Description Text - DETX (61):

Now it is discovered that some, but not all, of the bidders on Lot 2 have made an incorrect assumption in preparing their quotes. The auction coordinator needs time to communicate with all bidders and correct the error, and estimates that this will require 10-15 minutes. Therefore it will take too long to give all bidders an equal chance of understanding the situation before Lot 2 closes. However, there is no disruption to Lot 3, which can continue as scheduled. The auction coordinator places Lot 2 in the Pause status, and changes the scheduled closing time for Lot 2 to 11:40 AM. No change is made to Lot 3. Bidding continues on Lot 3, but no bids can be placed on Lot 2 at this point. Lot 2 is now scheduled to close after Lot 3. The auction now appears as in Table 7.

Detailed Description Text - DETX (102):



While the invention has been described in detail and with reference to specific embodiments thereof, it will be apparent to one skilled in the art that various **changes** and modifications can be made therein without departing from the spirit and scope thereof. In particular, it should be noted that while the auction functions described above have been described in the context of downward pricing auctions the auction functions can be equally applied to upward pricing auctions. Thus, it is intended that the present invention cover the modifications and variations of this invention provided they come within the scope of the appended claims and their equivalents.

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